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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/995,007	11/26/2001	Nancy Carrasco	96700/708	9968

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Craig J. Arnold
Amster, Rothstein & Ebenstein
90 Park Avenue
New York, NY 10016

EXAMINER	
SPIEGLER, ALEXANDER H	
ART UNIT	**PAPER NUMBER**
1637	10

DATE MAILED: 10/01/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application N .	Applicant(s)	
	09/995,007	CARRASCO ET AL.	
	Examiner	Art Unit	
	Alexander H. Spiegler	1637	

-- The MAILING DATE of this communication appears on the c ver sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 June 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *56-70* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *56-70* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *9* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Status of the Application

1. This action is in response to Paper No. 9, filed on June 3, 2003. Currently, claims 56-70 are pending and are rejected. This action is made NON-FINAL. Any objections and rejections not reiterated below are hereby withdrawn. It is also noted that this application has changed locations to the Examiner listed below.

Information Disclosure Statement

2. The information disclosure statement of Paper No. 9 complies with CFR 1.97, 1.98, and M.P.E.P. 609, and has been considered (see enclosed signed PTO-1449).

Claim Rejections - 35 USC § 112

Written Description

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 63-70 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a written description rejection.

The claims are broadly drawn to a method for determining whether a mammalian sodium/iodide symporter is present in a sample, the method comprising contacting the sample with an antibody that is immunoreactive with the mammalian sodium/iodide symporter, wherein detecting binding of the antibody to the mammalian sodium/iodide symporter indicates that the mammalian sodium/iodide symporter is present in the sample.

Thus, the claims are drawn to detecting whether a mammalian sodium/iodide symporter is present in a sample by contacting the sample with *any* antibody that is immunoreactive with *the* mammalian sodium/iodide symporter. That is, this claim encompasses the genus *any* antibody that is "immunoreactive" with *the* mammalian sodium/iodide symporter. It is noted, the claims refer to *the* mammalian sodium/iodide symporter, which encompasses *any* sodium/iodide symporter from *any* mammal. This claim language would encompass a large number of possible antibodies "immunoreactive" with any the sodium/iodide from any mammalian. The specification does not describe any sufficient, relevant, identifying characteristics for the members encompassed by the claim language. For example, the specification does not describe any common structure among the possible antibodies "immunoreactive" with any sodium/iodide symporter from any mammal. Accordingly, because the specification does not adequately describe the large genus encompassed by the claims, a person skilled in the art would not recognize that the inventor had possession of the claimed invention.

Enablement

5. Claims 56-62 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a method of detecting a target nucleic acid using the probe of SEQ ID

NO: 1 or the method of determining whether a mammalian sodium/iodide symporter is expressed in a mammalian tissue by detecting the presence of SEQ ID NO: 1, does not reasonably provide enablement for the method comprising contacting nucleic acid from the mammalian tissue with *any* nucleic acid probe which can hybridize to a portion of the nucleotide sequence set forth in SEQ ID NO: 1, wherein detecting hybridization of the nucleic acid probe to the nucleotide sequence indicates that the mammalian sodium/iodide symporter is expressed in the mammalian. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make or use the invention commensurate in scope with these claims.

Case law has established that "(t)o be enabling, the specification of a patent must teach those skilled in the art how to make and use the full scope of the claimed invention without 'undue experimentation.'" *In re Wright* 990 F.2d 1557, 1561. In *In re Fisher*, 427 F.2d 833, 839, 166 USPQ 18, 24 (CCPA 1970) it was determined that "(t)he scope of the claims must bear a reasonable correlation to the scope of enablement provided by the specification to persons of ordinary skill in the art". The amount of guidance needed to enable the invention is related to the amount of knowledge in the art as well as the predictability in the art. Furthermore, the court in *Genetech Inc. v Novo Nordisk* 42 USPQ2d 1001 held that "(I)t is the specification, not the knowledge of one skilled in the art that must supply the novel aspects of the invention in order to constitute adequate enablement".

Also, MPEP 2164.01 states:

"Even though the statute does not use the term 'undue experimentation,' it has been interpreted to require that the claimed invention be enabled so that any person skilled in the art

can make and use the invention without undue experimentation. *In re Wands*, 858 F.2d at 737, 8 USPQ2d at 1404 (Fed. Cir. 1988)."

The *Wands* court outlined several factors to be considered in determining whether a disclosure would require undue experimentation:

"They include (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims." *Id.* at 1404.

In the instant case, the specification does not enable one of skill in the art to make and use the claimed invention for the following reasons:

(1) ***Nature of the Invention & Breadth of the Claims***

The claims are directed to a method of determining whether a mammalian sodium/iodide symporter is expressed in a mammalian tissue, comprising contacting nucleic acid from the mammalian tissue with *any* nucleic acid probe which can hybridize to a portion of the nucleotide sequence set forth in SEQ ID NO: 1, *wherein detecting hybridization of the nucleic acid probe to the nucleotide sequence indicates that the mammalian sodium/iodide symporter is expressed in the mammalian.*

Thus, the claims are broadly drawn to contacting nucleic acid from a mammalian tissue with *any* probe, wherein the hybridization of the probe to the nucleic acid indicates the expression of the mammalian sodium/iodide symporter.

The specification states, "The nucleic acid probes of the present invention may be DNA or RNA and may vary in length from about 8 nucleotides to the entire length of the mammalian sodium/iodide symporter." (page 11, lines, 34-37)

Thus, the claims are drawn to hybridizing a nucleic acid probe of as little as 8 nucleotides (or smaller, due the language of "about") to nucleic acid from a mammalian tissue, wherein the hybridization of these 8 or less nucleotides indicates the expression of the mammalian sodium/iodide symporter.

(2) ***Relative Skill of those in the Art, State of the Prior Art, Amount of Direction or Guidance Presented & Presence or Absence of Working Examples***

The relative level of skill in molecular biology is high; in the instant case, this is evidenced by the lack of cloning or characterization of the cDNA encoding the mammalian sodium/iodide symporter prior to the present invention. (see specification, page 4, lines, 3-5) Therefore, the prior art is silent as to any nucleic acid probes of 8 or less nucleotides that when hybridized to mammalian nucleic acid, indicates mammalian sodium/iodide symporter expression.

The specification provides guidance through working examples of the isolation and characterization of the primary sequence and predicted secondary structure of the sodium/iodide symporter molecule. (see pages 17-22) *mammalian sodium/iodide symporter*. Specifically, the specification does not teach what modifications can be made to a nucleic acid probe that could still function for detection mammalian sodium/iodide symporter expression.mammalian sodium/iodide symporter. Furthermore, the specification does not provide any examples of possible probes that when hybridized to mammalian nucleic acid; demonstrate the expression of

the mammalian sodium/iodide symporter.(3) ***Quantity of Experimentation Necessary & the Unpredictability of the Art***

In order to practice the invention, the practitioner must hybridize a probe of 8 or less nucleotides to the nucleic acid of a mammalian tissue, and then test the hybridization product to determine whether the mammalian sodium/iodide symporter was expressed. This experimentation would be completely driven by a trial and error process with no guidance from either the specification or the art as to which nucleotides are necessary, which modifications, if any, can be made for the probe, etc. Because such experimentation requires an extremely large amount of trial and error analysis, with little to no starting point, and because the skilled artisan must supply novel experimentation of first finding and then correlating possible probes with the expression of the mammalian sodium/iodide symporter, such analysis is unpredictable, and is therefore considered undue.

Additionally, there is a high level of unpredictability because there are no previous experiments in the prior art that have taught the cloning or characterization of the cDNA encoding the mammalian sodium/iodide symporter prior to the present invention.

Accordingly, in view of the unpredictability in the art and in view of the lack of specific disclosure in the specification, undue experimentation would be required to practice the invention as it is claimed.

6. Claims 63-70 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for method for determining whether a mammalian sodium/iodide symporter is present in a sample, the method comprising contacting the sample with an antibody that

specifically binds to SEQ ID NO: 2, wherein detecting binding of the antibody to the mammalian sodium/iodide symporter indicates that the mammalian sodium/iodide symporter is present in the sample, does not reasonably provide enablement for method for determining whether a mammalian sodium/iodide symporter is present in a sample, the method comprising contacting the sample with *any* antibody that is immunoreactive with the mammalian sodium/iodide symporter, wherein detecting binding of the antibody to the mammalian sodium/iodide symporter indicates that the mammalian sodium/iodide symporter is present in the sample. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

Case law has established that "(t)o be enabling, the specification of a patent must teach those skilled in the art how to make and use the full scope of the claimed invention without 'undue experimentation.'" *In re Wright* 990 F.2d 1557, 1561. In *In re Fisher*, 427 F.2d 833, 839, 166 USPQ 18, 24 (CCPA 1970) it was determined that "(t)he scope of the claims must bear a reasonable correlation to the scope of enablement provided by the specification to persons of ordinary skill in the art". The amount of guidance needed to enable the invention is related to the amount of knowledge in the art as well as the predictability in the art. Furthermore, the court in *Genetech Inc. v Novo Nordisk* 42 USPQ2d 1001 held that "(I)t is the specification, not the knowledge of one skilled in the art that must supply the novel aspects of the invention in order to constitute adequate enablement".

Also, MPEP 2164.01 states:

"Even though the statute does not use the term 'undue experimentation,' it has been interpreted to require that the claimed invention be enabled so that any person skilled in the art

can make and use the invention without undue experimentation. *In re Wands*, 858 F.2d at 737, 8 USPQ2d at 1404 (Fed. Cir. 1988)."

The *Wands* court outlined several factors to be considered in determining whether a disclosure would require undue experimentation:

"They include (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims." *Id.* at 1404.

In the instant case, the specification does not enable one of skill in the art to make and use the claimed invention for the following reasons:

(1) ***Nature of the Invention & Breadth of the Claims***

The claims are broadly drawn to a method for determining whether a mammalian sodium/iodide symporter is present in a sample, the method comprising contacting the sample with an antibody that is immunoreactive with the mammalian sodium/iodide symporter, wherein detecting binding of the antibody to the mammalian sodium/iodide symporter indicates that the mammalian sodium/iodide symporter is present in the sample.

Thus, the claims are broadly drawn to contacting a sample with *any* antibody that is "immunoreactive" with the mammalian sodium/iodide symporter, wherein detecting binding of the antibody to the mammalian sodium/iodide symporter indicates that the mammalian sodium/iodide symporter is present in the sample.

(2) ***Relative Skill of those in the Art, State of the Prior Art, Amount of Direction or Guidance Presented & Presence or Absence of Working Examples***

The relative level of skill in molecular biology is high; in the instant case, this is evidenced by the lack of cloning or characterization of the cDNA encoding the mammalian sodium/iodide symporter prior to the present invention. (see specification, page 4, lines, 3-5) Therefore, the prior art is silent as to *any* antibodies that are immunoreactive with the mammalian sodium/iodide symporter, wherein detecting binding of the antibody to the mammalian sodium/iodide symporter indicates that the mammalian sodium/iodide symporter is present in the sample.

The specification provides guidance through working examples of the isolation and characterization of the primary sequence and predicted secondary structure of the sodium/iodide symporter molecule. (see pages 17-22) Specifically, the specification teaches the amino acid sequence of the mammalian sodium/iodide symporter (see SEQ ID NO: 2).

any antibodies that are immunoreactive with the mammalian sodium/iodide symporter, wherein detecting binding of the antibody to the mammalian sodium/iodide symporter indicates that the mammalian sodium/iodide symporter is present in the sample.

Specifically, the specification does not teach what modifications can be made to specific residues or domains that could still function for detection mammalian sodium/iodide symporter expression.mammalian sodium/iodide symporter. Furthermore, the specification does not provide any examples of possible antibodies that when contacted to the mammalian sodium/iodide symporter; demonstrate the presence of the mammalian sodium/iodide symporter.(3) ***Quantity of Experimentation Necessary & the Unpredictability of the Art***

In order to practice the invention, the practitioner must make any contact any antibody that is "immunoreactive" with the mammalian sodium/iodide symporter, and then test this

contacting to determine whether the mammalian sodium/iodide symporter is present. This experimentation would be completely driven by a trial and error process with no guidance from either the specification or the art as to which amino acid residues are necessary, which modifications, if any, can be made for the antibody, etc. Because such experimentation requires an extremely large amount of trial and error analysis, with little to no starting point, and because the skilled artisan must supply novel experimentation of first finding and then correlating possible antibodies with the presences of the mammalian sodium/iodide symporter, such analysis is unpredictable, and is therefore considered undue.

Additionally, there is a high level of unpredictability because there are no previous experiments in the prior art that have taught the cloning or characterization of the cDNA encoding the mammalian sodium/iodide symporter prior to the present invention.

Accordingly, in view of the unpredictability in the art and in view of the lack of specific disclosure in the specification, undue experimentation would be required to practice the invention as it is claimed.

Applicants are reminded that the enablement requirement of 35 U.S.C. 112, first paragraph, is separate and distinct from the description requirement. Vas-Cath, Inc. v. Mahurkar, 935 F.2d 1555, 1563, 19 USPQ2d 1111, 1116-17 (Fed. Cir. 1991).

Conclusion

7. No Claims are allowable.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander H. Spiegler whose telephone number is (703) 305-0806. The examiner can normally be reached on Monday through Friday, 7:00 AM to 3:30 PM.

If attempts to reach the examiner are unsuccessful, the examiner's supervisor, Gary Benzion can be reached on (703) 308-1119. The fax number for the organization where this application or proceeding is assigned is (703) 872-9306. Applicant is also invited to contact the TC 1600 Customer Service Hotline at (703) 308-0198.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0196.

Alexander H. Spiegler
September 29, 2003

GARY BENZION, PH.D
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1600